

Usual Suite of LAs

System extension support

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Local applications are one way of extending the functionality of the IRM system code. As separately compiled and downloaded procedures, once enabled, they become a seamless addition to the system. This note lists a number of LAs that are commonly used in large collections of IRMs.

General LAs

ARPZ

This LA serves to clear the IPARP table of all entries once it is enabled. Actually, it only clears those entries that are idle. But it is usually enabled only shortly following system reset, so the effect is that the table is cleared at reset. This functionality could, and probably should, be added to the system code itself.

ECHO

This LA is a UDP Echo Server. It listens to UDP port 7 and replies whatever it receives. It might be called `udpd` in unix systems.

REQM

Request Monitor service monitors active data requests, insuring that the clients are still available. If nothing is received from a client in some time, say 28 seconds, it tries to provoke the client to send something. If after 3 attempts nothing has been received, it cancels the active request.

TFTP

The TFTP server supports both read and write functions. Downloadable programs may be addressed using their 8-character names, such as `LOOPREQM`, or the system code itself may be addressed using the name `System`. System table names, each of 5 characters, may also be accessed. In addition, fictitious names may be used to access arbitrary areas of memory. As an example, `MW788.8` accesses 8 bytes memory by words, beginning at address `00000788`.

DNSQ

This Domain Name Service client maintains the IPNAT table contents, each of entry of which holds a node number and IP address, cached from accesses to a DNS by using the name `node0562`, for example. Each entry is typically refreshed about every 8 hours, at random times no more closely spaced than one second.

Acnet-related LAs

A number of LAs provide support for various Acnet services.

AAUX

This LA provides the functionality of `ACNAUX`, or "Acnet Aux." A number of utility features are defined by Acnet, and this code supports many of them, though not by any means all.

AERS

This LA shepherds Acnet alarm messages to AEOLUS, the Acnet alarm message handler. It receives alarm messages via a message queue from the underlying system code.

FTPM

This LA provides the functionality of FTPMAN, the Fast Time Plot Manager support in Acnet. Support for both Continuous and Snapshot plot data is included. The continuous case works for 15 Hz for any analog channel, and for all rates up to 1000 Hz for IRM digitizer channels. The snapshot support covers both Swift digitizers at rates from 6–800 KHz, and Quick digitizers at rates up to 10 MHz.

DBDL

The IRM maintains a local database of device information. Since Acnet keeps a centralized database, changes made to that database are downloaded to the front end in an effort to keep the two databases in synchronization.

SLOG

Acnet client applications must exhibit accountability by reporting to Acnet when they make changes to Acnet devices. This information is logged for possible use by operations in diagnosing problems.

SWFT

Support of Swift digitizers requires some resource management, as the digitizer hardware can only be operated with one set of "camera settings" at one time. These settings include the triggering clock event#, the delay, and digitize rate.

Booster HLRF-related LAs

HLRF

This LA supports the RS-232-interfaced Local Control Box used in Booster.

RFBS

This LA provides support for Booster HLRF digital control, bit alignment, and trip logs.

DAC0

This LA supports automatic regulation of the Auto-tuning of the Ferrite Bias offset for Booster.

MRF0

This LA supports automatic regulation of the Auto-tuning of the Ferrite Bias offset for Main Injector.

Main Injector HLRF-related LAs

MIRF

This LA supports the RS-232-interfaced Local Control Box used in Main Injector.

RFMS

This LA provides support for Main Injector HLRF digital control, bit alignment, and trip logs.

DAC1

This LA supports automatic adjustment of the high energy bias for Main Injector.

SQR1

This LA computes a linearized value for RF power signals for Main Injector.

SHIN

This LA generates a status bit that indicates when fresh data is available in the data pool for Main Injector, since MI operates only every 2 seconds or so, rather than at 15 Hz as in Booster.

Linac-related LAs

NETM

This LA monitors token ring receive traffic. If too much time passes without receiving any messages via token ring, it sends a message to itself. If that fails after a few tries, the token ring initialization page is automatically invoked to reconnect to the token ring network.

GATE

This LA supports the copying of SRM memory from different local station nodes and therefore from different arcnets. The client sends a message to the taskname GATE, and this LA supports that protocol that requests and received SRM memory data via arcnet.

QUAD

This LA provides automatic trip recovery of drift tube quadrupole power supplies used in low energy Linac systems.

CROB

This LA provides automatic recovery from Crobar trips of low energy Linac RF stations.

DRIV

This LA supports automatic recovery from Driver trips of low energy Linac RF stations.

PINH

This LA supports permanent inhibit logic needed in low energy Linac RF stations.

GRAD

This LA provides automatic regulation of low energy Linac RF cavity gradients.

PHAS

This LA provides automatic regulation of intertank RF phase for low energy RF systems.

COND

This LA provides for automatic reset of interlocks trips in klystron stations.

FREQ

This LA regulates the RF frequency in klystron systems.

TEMP

This LA regulates the water temperature in klystron systems.

STAT

This LA maintains spark count statistics for klystron systems.

ARCT

This LA calculates a phase difference using arctangent calculation.

KRFG

This LA regulates the klystron RF gradients.

PERV

This LA calculates the perviance for klystron stations.

SCNT

This LA provides enhanced spark counting statistics in klystron systems.